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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,988	12/13/2001	James M. Florence	SLA0354	7651

7590

01/30/2003

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,988

Applicant(s)

FLORENCE, JAMES M.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 10-12, 14 are rejected under 35 U.S.C. 102(e) as being anticipated by King et al.

King et al. discloses a polarized light beam splitter assembly (See 20 in Figure 3) comprising a polarized light beam splitter prism (See 22 in Figure 3) including an embedded wire grid polarizer (See 26 in Figure 3; Figure 2) having a wire grid in communication with an internal air gap (See spaces between 34 in Figure 2 when the structure in Figure 2 is incorporated as 26 in Figure 3); a light source (See 52 in Figure 3) positioned to emit light to the polarized light beam splitter; and a reflection device (See 50, 54, or 56 in Figure 3), such as a mirror or quarter wave plate, positioned to receive light redirected by the polarized light beam splitter. King et al. additionally discloses the polarized light beam splitter defining an elongate axis (See axis defined either by 72 or 78 in Figure 3) and the internal air gap being positioned at an angle of approximately 45 degrees with respect to the elongate axis (Note that with respect to either elongate axis as

defined, 26 lies on the long diagonal of the cube, and is thus at an angle of approximately 45 degrees from either elongate axis).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9, 13, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al. or Perkins et al. in view of Matsuda and Yamada et al.

King et al. discloses the invention as set forth above in Claim 10. Perkins et al. disclose a polarized light beam splitter assembly (See 100 in Figure 10), comprising a polarized light beam splitter prism (See two prisms in Figure 10); and a wire grid polarizer (See 61 in Figure 10). King et al. additionally discloses the polarized light beam splitter defining an elongate axis (See axis defined either by 63 or 65 in Figure 10) and the embedded wire grid polarizer being positioned at an angle of approximately 45 degrees with respect to the elongate axis (Note that with respect to either elongate axis as defined, 61 lies on the long diagonal of the cube, and is thus at an angle of approximately 45 degrees from either elongate axis). Both King et al. and Perkins et al. lack the wire grid polarizer being secured to an exposed internal surface of the beam splitter prism via a spacer so as to define a gap between a surface of the wire grid polarizer and the exposed internal surface of the beam splitter prism. However, Matsuda teaches an apparatus

utilizing an embedded wire grid polarizer (See for example Figure 8), wherein the wire grid polarizer (See 34A, 34B in Figure 8) is secured to an exposed internal surface of a substrate (See 31 in Figure 8) via a spacer or raised projection (See rectangular spacers connecting 31 and 32 in Figure 8) so as to define a gap between a surface of the wire grid polarizer and the exposed internal surface of the beam splitter prism. Yamada et al. additionally teaches that such spacers may be in the form of rigid glass beads, all of uniform diameters to provide an air gap of uniform thickness (See 2 in Figure 5; col. 10, lines 54-64). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the wire grid polarizer be secured to an exposed internal surface of the beam splitter prism via a spacer, such as a rectangular or spherical shaped spacer or a raised projection, so as to define a gap between a surface of the wire grid polarizer and the exposed internal surface of the beam splitter prism, as taught by both Matsuda and Yamada et al., in the polarized light beam splitter assembly of either King et al. or Perkins et al. One would have been motivated to do this to seal and protect the wire grid polarizer, as well as provide a uniform thickness spacing between the wire grid polarizer and the exposed internal surface of the beam splitter prism. Additionally, it is noted that the use of adhesives, such as optical epoxy and solder, for attaching optical components together is well known in the art. One would use adhesives to provide a permanent/semi-permanent bond between optical elements, the type of adhesive use being dependent on the particular application.

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5. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al.

King et al. discloses the invention as set forth above in Claim 10, except for the air gap having a width in the range of one to thirty μm . It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the width of the air gap to be in the range of one to thirty μm , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would have been motivated to have the air gap have a width in the range of one to thirty μm for the purpose of reducing fabrication costs since larger air gap widths require a spacer with an appropriately larger thickness, while providing a controlled air gap spacing.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
January 24, 2003

